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V. *Account of Dr. Knight's Method of making artificial Loadstones. By Mr. Benjamin Wilson, F. R. S.*

TO JOSEPH BANKS, ESQ. P. R. S.

SIR,

Read Dec. 17,
1778. THE method of making artificial loadstones, as it was discovered and practiced by the late Dr. GOWIN KNIGHT, being unknown to the public; and I myself having been frequently present when the doctor was employed in the most material steps of that curious process, I thought a communication thereof would be agreeable to you and the philosophic world.

The method was this: having provided himself with a large quantity of clean filings of iron, he put them into a large tub that was more than one-third filled with clean water: he then, with great labour, worked the tub to and fro for many hours together, that the friction between the grains of iron by this treatment might break off such

smaller parts as would remain suspended in the water for a time. The obtaining of those very small particles in sufficient quantity seemed to him to be one of the principal *desiderata* in the experiment.

The water being by this treatment rendered very muddy, he poured the same into a clean earthen vessel, leaving the filings behind; and when the water had stood long enough to become clear, he poured it out carefully, without disturbing such of the iron sediment as still remained, which now appeared reduced almost to impalpable powder. This powder was afterwards removed into another vessel, in order to dry it; but as he had not obtained a proper quantity thereof, by this one step he was obliged to repeat the process many times.

Having at last procured enough of this very fine powder, the next thing to be done was to make a paste of it, and that with some vehicle which would contain a considerable quantity of the phlogistic principle; for this purpose he had recourse to linseed oil in preference to all other fluids.

With these two ingredients only he made a stiff paste, and took particular care to knead it well before he moulded it into convenient shapes. Sometimes, whilst the paste continued in its soft state, he would put the

impression

impression of a seal upon the several pieces; one of which is in the British Museum.

This paste was then put upon wood, and sometimes on tiles, in order to bake or dry it before a moderate fire, at a foot distance or thereabouts.

The doctor found, that a moderate fire was most proper, because a greater degree of heat made the composition frequently crack in many places.

The time required for the baking or drying of this paste was generally five or six hours before it attained a sufficient degree of hardness. When that was done, and the several baked pieces were become cold, he gave them their magnetic virtue in any direction he pleased, by placing them between the extreme ends of his large magazine of artificial magnets for a few seconds or more, as he saw occasion.

By this method the virtue they acquired was such, that when any one of those pieces was held between two of his best ten guinea bars, with its poles purposely inverted, it immediately of itself turned about to recover its natural direction, which the force of those very powerful bars was not sufficient to counteract.

I am, &c.

